DOCUMENT RESUME

ED 054 001 SO 001 043

TITLE	Futuristics. Social Studies. Secondary Education.
INSTITUTION	Hawaii State Dept. of Education, Honolulu. Office of Instructional Services.
PUB DATE	71
NOTE	24p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	Curriculum Guides, Deductive Methods, Discussion (Teaching Technique), *Individualized Curriculum, Inductive Methods, Instructional Materials, Overpopulation, Pollution, Secondary Grades, Social Change, *Social Planning, *Social Problems, *Social Studies Units, Teaching Guides, *Technological Advancement
IDENTIFIERS	*Futuristics

ABSTRACT

This is one of a series of individualized instructional packets designed to help students and teachers as they cooperatively plan secondary social studies objectives, evaluate learning, and develop curriculum. The learning packet is designed for the intermediate student and includes: a pre- and post test; three lessons with major generalizations listed, behavioral objectives, and learning activities; and, three readings. The summarized generalizations are: 1) The technological advances made by man have brought about rapid changes making it possible for man to live a "better" life; 2) Technological changes have also created problems, will bring about many new ones, and intensify them in the future; overpopulation, congested highways and pollution are among them; 2) In the future, change will occur at an even more rapid pace; and 4) Change will require planning on the part of the people, government, industry, scientists, experts, and a progressive education system to minimize the problems. Accordingly, the specific behavioral objectives include: 1) identification of the advantages and disadvantages of technological advances; 2) identification of the changes that may take place by the year 2000; 3) identification of specific tasks to be done by our society in preparation for the future. Discussion, independent reading, and resource utilization are all a part of the inductive and deductive approach indicated in this packet. (SBE)

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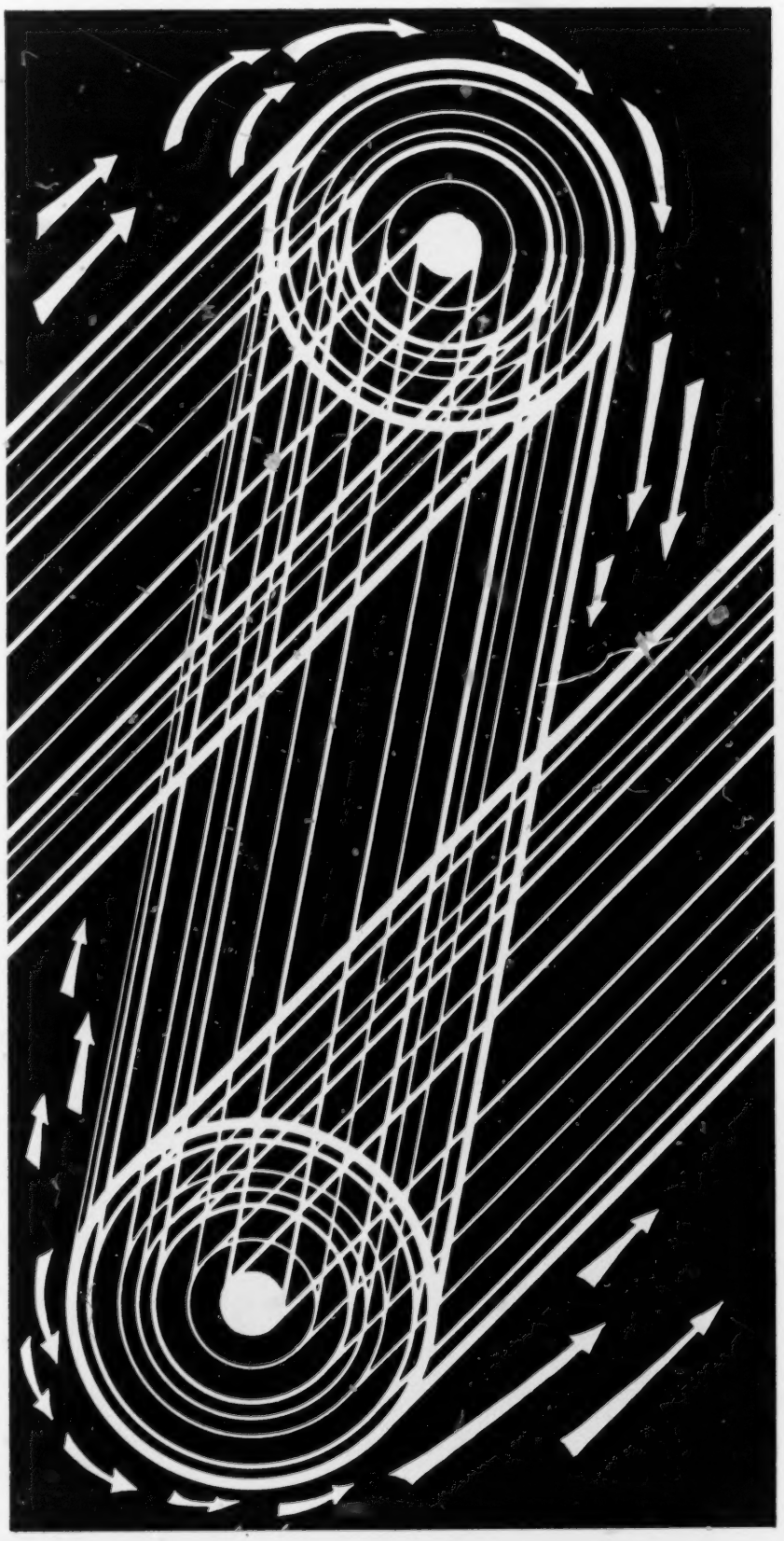
FUTURISTICS



SECONDARY EDUCATION

IIM SOCIAL STUDIES

OFFICE OF INSTRUCTIONAL SERVICES
DEPARTMENT OF EDUCATION
STATE OF HAWAII
1971

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FUTURISTICS

SECONDARY EDUCATION

IIM SOCIAL STUDIES

Published by the
Office of Library Services/TAC
for the
OFFICE OF INSTRUCTIONAL SERVICES
Department of Education · State of Hawaii · 1971
Publication No. TAC 70-2314

FOREWORD

This is one of the many individualized instructional packets compiled or revised by the General Education Branch, Office of Instructional Services, Department of Education.

The purpose of these packets is to assist teachers as they individualize instruction to meet the needs, interests and abilities of students.

An updated list of all such packets published by the General Education Branch through the Teacher Assist Center is printed each year and distributed to schools and libraries. The list contains the titles of the learning packets, level (primary, elementary, junior high or high school) and subject area.

We hope these individualized instructional materials prove helpful to students and teachers as they cooperatively plan objectives, evaluate learning, and plot next steps.

Margaret Y. Oda
Margaret Y. Oda
Director
General Education

Arthur F. Mann
Arthur F. Mann
Assistant Superintendent
Office of Instructional Services

Instructions to Teacher

This learning packet is designed for the intermediate student. The teacher may include additional readings and questions.

Identification of Learner

Any intermediate student.

Evaluation

The pre-test will also be the post-test.

Key for the pre-post test.

1. F	6. T
2. F	7. T
3. F	8. T
4. F	9. T
5. T	10. T

Bibliography

Junior Scholastic March 23, 1970
Read Magazine October 16, 1965

Major Ideas

The technological advances made by man have brought about rapid changes making it possible for man to live a 'better' life.

The technological changes have also created problems such as rapid population increases, congested highways and pollution.

The technological changes in the near future will bring about many new problems and intensify such problems as over population and pollution.

Technological advances will bring about changes in the future at an even more rapid pace.

The changes brought about by the technological advances will require planning on the part of the people to minimize the problems.

Some preparation for the future can be made by sound planning in government and industry, with the support of experts (scientists) and a progressive educational system.

Behavioral Objectives - The Student will be Able to:

Identify the advantages and the disadvantages of technological advances.

Identify the changes that may take place by the year 2000.

Better appreciate the problems as well as the progress for tomorrow.

Identify some specific things that people in our society can do to prepare for the future.

STUDENT SECTION

FUTURISTICS

Pre-test

Complete the pre-test, making sure you follow the directions. When you are finished taking the test, take it to your teacher for evaluation.

Purpose of the Pre-test

If you successfully complete the pre-test, you need not complete this Learning Packet. If you did not do well, do not be discouraged, but go on to Lesson 1.

Pre-test and Post-test

Answer the following questions with a T or a F on a separate sheet.

1. Predictions for the future are usually guesswork on the part of scientists without much possibility of becoming a reality.

2. There is little we can do to help solve the problems of the future that arise from new inventions.

3. Students will be required to learn less because machines will do most of the computations and work.

4. The products and techniques of the future will only intensify the problems without solving them.

5. The advances that technology has made have both advantages and disadvantages.

6. Planning today should include solving problems of today as well as those which will result from new inventions and changes.

7. An individual may have to plan for several jobs in the future.

8. Man will probably live to be more than 75 years old by the year 2000.

9. The rapid changes to come in the future may intensify the "generation gap."

10. Schools may need to add courses such as "Leisure Time Activities."

Lesson I

Major Ideas:

The technological advances made by man have brought about rapid changes making it possible for man to live a 'better' life.

The technological changes have also created problems such as rapid population increases, congested highways and pollution.

Behavioral Objective:

You will identify the advantages and the disadvantages of technological advances.

Learning Activity:

Read the two excerpts below and answer the questions. Write your answers on a separate sheet of paper and hand them in to the teacher.

a. Thirty years. A lot can happen in 30 years. In 1940 space travel was science fiction, and experimental rockets had a very earth-bound range under 150 miles. There were no LP's, no automatic dish washers, no jets, no electronic computers, no atomic energy plants (or atomic bombs).

A 1940 story in Scholastic predicted that homes of the future (1964, that is) would have air conditioning, TV (would it be called radioptics?) would take the place of radios. The 1964 house wife would wear stockings made of coal (nylon) and use a newfangled substance called plastic. "The Rust Brothers" mechanical cotton picker," Scholastic thought might "throw a million and a half pickers out of work, not to mention the millions of horses and mules now used in the fields." But the pickers might find work in the first factory "to begin making rubber out of oil and air."

B. Bill Future could never get fresh,
For his girl was more metal than flesh.
As soon as he kissed her,
She blew a transistor,
And her gears made a terrible mesh.

1. Compare the attitudes of the two writers. Are they more similar or dissimilar? Withwhich writer do you tend to agree with? State some of your reasons.

2. Do you think "progress" in terms of technological advances, has disadvantages? If so, discuss some of the problems that have resulted right now in our time from some of that "progress." If you don't agree, support your position.

Lesson II

Major Ideas

The technological changes in the near future will bring about many new problems and intensify such problems as over population and pollution.

Technological advances will bring about changes in the future at an even more rapid pace.

Behavioral Objectives

You will identify the changes that may take place by the year 2000.

You will identify the problems that will arise from these changes.

You will better appreciate the problems as well as the progress for tomorrow.

Instructions

Do the following problems. Answer them on a separate sheet of paper and hand them in to the teacher.

Learning Activities

1. Read Reading # 1 ("Man of the Future").
   What kinds of problems do you think man will encounter in the future?
   Make a list of the problems.

2. Read Reading # 2 ("Man at the Turning Point").
   Make a list of the possible problems man might encounter in the future as suggested in the reading.

3. Compare the two lists. Were the kinds of problems you predicted similar to those in Reading # 2?

4. Think about some societal problems we face today. Make a list of some of them. Are they similar to the kinds of problems predicted for our future?

Lesson III

Major Ideas

The changes brought about by the technological advances will require planning on the part of the people to minimize the problems.

Some preparation for the future can be made by sound planning in government and industry, with the support of experts (scientists) and a progressive educational system.

Behavioral Objective

You will be able to identify some specific things that people in our society can do to prepare for the future.

Instructions

Do the following problems on a separate sheet and hand them in to the teacher.

Learning Activities

1. List some specific actions we could take to minimize the problems of the future. Categorize them into such areas as Education and Industrial Planning.

2. Read Reading # 3.

   Make a list of possible courses that might be required of intermediate school students in the future. Can you add more to the list than those suggested in the reading?

Quest

You may do any of the following activities for further study.

1. Read books by Isaac Asimov or Ray Bradbury and write a report on life in the future.

2. Do a report from the newspapers on the Governor's Conference on the year 2000.

3. Read stories by Jules Verne and compare his predictions with the actual inventions of today.

4. Locate and read other articles on futuristics in magazines such as Science Digest.

Reading No. 1

Man of the Future

Man is a remarkable being. If healthy, he can survive ten days without water in cool climates, and several weeks without food in warm ones. He has gone 243 hours without sleep. He has endured air temperatures of 212° for about an hour and water temperatures of 41 degrees for about half an hour.

But if science can do all it thinks it can, we haven't seen anything yet. By the year 2000, man could be a creature so different that people from today's world wouldn't recognize him. Here are some things that might be in store for you or your children.

Future man may swim easily under water without need of any diving apparatus. Assuming that water is well supplied with free oxygen, human lungs would have no trouble breathing in water. The big danger would be damage to their salty tissues. Scientists can solve this problem by enriching water with salt. In fact, they have put dogs and mice in specially-prepared tanks of water and let them swim about for as long as 18 hours. When the lungs of the dogs were emptied of water and filled with oxygen, they showed no ill effects.

Now science has developed a silicone-rubber membrane only one-thousandth of an inch thick. It holds back water but allows oxygen to pass right through. Scientists see no reason why some sort of silicone-coated "gills" could not be developed for man's use.

If he doesn't like swimming, future man might take to ripping up trees or tossing around automobiles. Quite possibly he will have the strength. In fact, a man-boosting machine has already been developed in this country. It consists of a powered metal skeleton which the person buckles to his arms, legs, and body. When he makes a motion, special sensors detect his movements, and the skeleton copies it-thus amplifying the man's strength. With such help, a human can reach about ten times his normal lifting or moving power.

This is only the beginning. Scientists working for the U.S. Defense are experimenting with chemicals which not only increase man's strength but also let him withstand extremes of heat and cold. The muscle chemicals would work against fatigue elements, such as lactic acid, that tire and

weaken muscle cells. Heat-control chemicals would control the hypothalamus, our body's temperature-control gland. If these studies prove successful, the Marine of 1985 will make today's toughest Leather-neck look like an anemic Gomer Pyle.

Superman or not, future man will have a wide range of body-replacement parts at his disposal. We have already entered the age of transplanted or artificial body organ. Big machines can be hooked into human beings to perform all the functions of the liver. Kidneys have been transplanted from one person to another. Even brains have been removed from test monkeys and kept alive-and "working"-for as long as 18 hours.

These developments would be only a beginning. Scientists today talk seriously of Cyborgs or "cybernetic organisms." They define a Cyborg as an "exogenously extended organizational complex functioning as a homeostatic system." In plain English this means a body which has machines hitched to it. or built into it, to perform some of its tasks.

The idea of Cyborgs can go way, way out. A man's brain might be hooked up directly to a computer, giving him immensely-extended mental powers. His muscles and nervous system might be "plugged in" to spaceship controls so that they respond automatically as an arm or leg would do. Part by part a body might be replaced by mechanical substitutes. In time the individual could reach a point where his only needs would be water to replace perspiration and an atomic battery to supply power for his body.

Perhaps the idea of becoming 90 per cent metal and plastic doesn't appeal to you, and you want to keep your human form. Well, science may let you keep it indefinitely. It is experimenting with ways to preserve life with deep-freezing techniques. In the past, slow freezing has always damaged the living cells beyond repair. But at temperatures near absolute zero, (-469 degrees F.) cells can be chilled so quickly that no vital injury takes place. Caterpillars have been frozen in this manner and left for a year-then thawed rapidly. They developed successfully into moths.

Scientists say it would be possible today for a human being to be frozen and preserved for many years. The preparations would be many and complicated. For instance, the person's blood would have to be drained and replaced by a special fluid. But in theory, at least, the body and brain would go into a kind of timeless sleep. This technique might be used to carry future explorers across the vast distances of space.

There are even wilder possibilities. In the past decades, science has done much to unravel the basic secrets of life. It has uncovered a molecule called DNA which decides whether a living cell will be a part of a tree or a cat or a worm-or a human being. The blueprint which DNA follows is called the genetic code, and scientists foresee the day when they will be able to read and control the code.

The implications for man are staggering. Within a single DNA molecule lies the blueprint for the whole organism. In theory it would be possible to reconstruct a human being from just one of his DNA spirals. Albert Einsteins and Winston Churchills could be continued in a neverending cycle. Every human being could start life anew in one of his DNA cells. By manipulating the genetic code, scientists could let parents select what qualities their sons and daughters might have.

The posssibilities outlined here for future men are just a few of those proposed. Scientists are now experimenting with hormones which might increase our brain cells and our intelligence. They are also seeking ways to slow the aging process so that humans might live to be 200 or 300 years old.

Read Magazine

Reading No. 2

Man at the Turning Point

In the next 50 years, man may cross the second great divide in his history. But difficult questions line his path toward the future.

For many years anthropologists have talked of "culture shock." By this they mean the way some people react to the "strange" customs of a different people. Some Peace Corps workers have suffered culture shock in various parts of the world--places where a "yes" may mean "no" and where laughter signifies anger. The victim withdraws from his new life and simply stops trying to meet its challenges.

Now anthropologists are talking of "future shock." And they predict that it could be one of tomorrow's most important diseases. For good or evil, the future is rushing in at an everfaster pace. The world we live in is new and gets newer every minute:

Ninety per cent of all the scientists who ever lived are living today.... Ninety per cent of all the drugs used today were unknown ten years ago.

...By 1975, three of every four workers in America will be turning out products which have not yet been invented ....Within ten years, about 50 per cent of the jobs now being done by college-trained white-collar workers will be done by machines.... Today 70 per cent of the world's people are rural. By 2000, 70 per cent will live in cities.... In 1900 there were 1 1/2 billion people on earth. By 2000, according to recently-revised estimates, there will be 7 1/2 billions. In other words, the number of humans on earth could increase five times during this century.

If what experts are predicting is true, these statements are just a glimpse of dizzy changes to come. In fact, man could be entering the second great turning point in his history. As shown on pages 6-8, the first came some 15,000 years ago, when man learned to produce his own food. With new energies set free, he developed cities, writing, and the first civilized societies.

Quite possibly, we have already entered the second turning point. We are well into the age of computers, space exploration, and nuclear energy. As shown on pages 12-14, man may soon be able to hook himself up to machines or control his own species by using genetic codes. One scientist has commented: "All we know is that there will be more changes in the next 50 years than have been created in all the past history of the world put

together. It will be as though the wheel, the printing press, and the telephone were all invented at once."

Problems Ahead

Since change rarely comes smoothly, people entering the next 50 years will face many problems. What, for instance, will the world do with its expanding population? Where can roads be put to handle the cars? How can the world's natural beauty be preserved? How can pollution of air and water be controlled? How can the growing numbers of people be fed?

Several experts say that man is losing the food race. Some foresee a "world calamity" within five or ten years unless ways are found to balance amount of food with number of hungry stomachs.

Pollution is also a great cause of concern. Last month scientists reported that the level of poisonous lead in the the earth's atmosphere had increased sharply in the past ten years--mainly the result of car exhaust from leaded gasolines. Other scientists have questioned the lead threat, but all agree that pollution in general is a grave worldwide problem. One has even predicted that "civilization will pass away from gradual suffocation in its own wastes."

Another major task of the future will be educating people for change. Already doctors and engineers can't keep up with the torrent of new developments. Within five or ten years after a person leaves school, his field of study may have changed almost completely. Ten years ago, the job of programming computers did not exist. Today, 100,000 people are employed in this form of work. In another ten years, computers will have changed so much that the job as we know it today will no longer exist.

In man's future world, professions may spring up and disappear within one generation. Corporations may create new products knowing full well that they will remain on the market for only a few months. A man might have three or four completely different jobs during his lifetime. No mother will be able to say "My son is going to be a lawyer" and have any idea what a future lawyer might be doing.

An Age of Leisure

Even more startling, work itself may no longer be the central focus of life. Ever since man's earliest days, he has had to work to live. From childhood on, he was expected to labor and produce. He was taught to consider laziness as wrong and industry as right. Much of his education was aimed at preparing him for a lifetime of work.

But the age of automation could change man's basic approach to work. With machines to do much of his labor, man faces a world of increasing free time. Work, will no longer lie at the center of his life. What will he do with his new-found leisure? How will he fill the empty hours?

The very swiftness of change will be a problem. Men are helped and sustained by tradition. They grow up in a culture and learn its customs and ideas. Their accustomed ways become a comfortable suit of armor which protects their passage through life. They know what things are acceptable and what aren't. They have no need for constant readjustment.

But what happens when change comes so rapidly that tradition breaks down? The individual could become like a young person whose family is always on the move. As soon as the person gets to know one set of friends, he must start out all over again. This can be a very disturbing process. Will civilized man be able to swim in the swift-moving stream of the next 50 years?

Despite such problems, not everyone who looks into the future finds a hopeless mess. Many experts see an enormous potential lying ahead. Convinced that nuclear war is too destructive, man may find a path to world peace. Using his new powers to change nature, he might bring a new era of prosperity. He will certainly share the tremendous excitement of man's journey into space. In many ways he could be entering one of his greatest periods.

And whatever life is like in 2000 or 2050, we can be sure that man will look back on the years we are now entering as some of the most important ever lived in his long and fascinating journey.

Honolulu Star-Bulletin
July 9, 1970

Reading No. 3

The Great World Ahead

From Chemical Week Magazine

"Researchers in industry and government are confident that we can solve many of our most pressing problems within the next 15 years or so as a result of technological advances . . . New products and techniques will add hundreds of billions of dollars to our gross national product by 1985." The foregoing are a couple of the eyebrow-raising conclusions of the first Survey of Technological Breakthroughs, a project of McGraw-Hill's Dept. of Economics.

The survey tells us to look for:

Nonpolluting automobiles by '75.

Plastic domed cities, by 2000.

Computerized medical diagnosis, by the mid '70s.

Prebirth alteration of sex, by '80.

Drugs to prevent and cure cancer, by '80.

Effective immunization against influenza outbreaks, by '79.

Test-tube creation of primitive life, by '85.

Chemical control of human aging, by '85.

Widespread use of disposable plastic furniture by the mid '70s.

A cashless and checkless society before '80. Business transactions will be made by use of terminals hooked up to computers.

Automated language translation, by '80.

Widespread use of computers in household operations, by '80.

Nationwide college TV hookups that will allow students to tune in on outstanding scholars, by '80.

Commercial application of a power reactor based on thermonuclear fusion, by '95.

Commercial ocean-bottom mining, by '80.

An inexpensive method of removing sulfur from coal before burning, by '73.

Sub-oceanic farming, to help relieve world food shortages, by '80.

Automatically piloted cars and automated highways, by '95.

An economically feasible electrically powered automobile, by '80.

Downtown airstrips for vertical-take-off and short-takeoff aircraft, by the mid '70s.

A "noise free" aircraft, by '90.

Capability to rescue astronauts in space, by '73.

A permanent lunar base, by '80.

Economically competitive extraction of oil from shale, by '80.

Economical manufacture of protein from petroleum, by '75.

General availability of fabrics with built-in flame retardancy, by '71.

Yes, it's going to be a great world. But not if we don't have a peaceful stable society that will permit us to enjoy the fruits of our proud achievement. Current events are not very reassuring on this score. The war in Asia is widening, a U.S. Soviet confrontation is looming again, youth at home is disaffected, our courts are under attack, labor is wielding the big stick, etc.

What can you do about it? Like other leaders of our society, business men must get involved. They must use their moral force, political and economic power to correct social inequities, influence national policy and defend those democratic institutions that are vital to the scientific and technological strides of the future.

Junior Scholastic
March 23, 1970

Reading No. 4

Human Relationships

As the world has grown more and more crowded with people, this course has become more and more necessary. It teaches students how to get along with people under many different circumstances. Luna and Ray live in an apartment building with 6,000 residents. Thus they can think of many instances when this course will come in handy.

Intermediate Ecology

By now protecting and preserving the environment has become essential--a matter of life or death. That's why private citizens need to know as much as possible about pollution and how to prevent it. Intermediate Ecology examines the problem in great detail. The course is required of all students.

Advanced Physics and Calculus

For many years scientific changes have been taking place at a faster and faster rate. As a result, students now take advanced math and science courses much earlier than they did in 1970.

Using Machines

Machines play such a big part in everyone's life that this course is offered to teach how to get the most out of them. This term Ray will learn how to program various types of computers. Luna will learn new ways to use a videophone.

The History of Space Travel

This history course--including moon geography--was just added a few years earlier following some amazing discoveries on Venus.

World Art

In this class, students use their videophones to view art treasures from museums all over the world.

Leisure Time

When the 20-hour work week was first introduced, a lot of people found themselves with more spare time on their hands than they knew what to do with. This course tries to show how to find hobbies and interests to use that free time creatively.

Of course, these courses and the school Luna and Ray attend do not yet exist. Such a school may never exist, for schools in the U.S. today are developing in many different directions. While some communities investigate the possibilities of an educational park, others seek other types of schools. Some foresee schools housed on certain floors of apartment buildings. Others predict that schools will be eliminated entirely and replaced by teaching machines within the home. Indeed, there are as many ideas and suggestions for schools of the future as there are students--which is quite a number.